

DETERMINANTS OF GROUNDNUT PRODUCTION IN THIRUKKOVIL DS DIVISION OF AMPARA DISTRICT

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ABSTRACT: A study was carried out in the Thirukkivil DS division of Ampara district to find out the factors determining the groundnut production. Using the random sampling procedure, a sample of 75 groundnut farmers was selected and a structured interview schedule was used to collect the primary data. Collected data were analyzed by using the SPSS. From the study, it was found out that the average age of groundnut farmers in the area was 48 years, 77.3% were males, and 92% were married. The average family size of a household was 4 members, and only 3 were involved in groundnut farming, about 93.3% of farmers worked as part time groundnut farmers. The average family income was Rs. 15,800 per month. Majority of the farmers had farming experience of 11 years. Most of farmers (89%) had cultivated in their own land in *Maha* season compare with other two seasons and most of farmers (36%) had cultivated in leased land in mid season compare with other two seasons. Most of farmers (66%) had cultivated in highland extent of 164 ac in *Maha* season. About 65% of farmers were cultivated in *Maha* and *Yala* seasons in study areas. Average groundnut cultivated extent was 2.4 ac, 1.83 ac and 2.53 ac in *Yala*, mid and *Maha* season respectively. According to the results the average net profit from groundnut cultivation was Rs. 56,175/ac in *Yala* season, Rs. 34,975/ac in *Maha* season and Rs 34,296 in mid season. Average net profit was high in *Yala* season because groundnut seeds demand was high and good market price during the season. Chi-square analysis indicated that there was a significant association between average groundnut yield obtained in *Yala* season and educational level of groundnut farmers, type of farming and use of IPNS techniques by the groundnut farmers in the study area. It is therefore recommended that government and relevant private institutions should take necessary steps to strengthen their extension services by considering the above factors to enhance the groundnut production.

Keywords: Chi-square, Groundnut, Profit, *Yala* season, Yield

1. INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is the 6th most important oil seed crop in the world. It contains 48 - 50% oil, 26 - 28% protein and 11 - 27 % carbohydrate, minerals and vitamin (Mukhtar, 2009). Groundnut is currently grown in over 22.2 million hectares worldwide with a total production of over 35 million tones. India and China are the world's largest producers of groundnut (Integrated breeding platform, 2012). In 2010, from 33.51 MT of world's groundnut production, 13.6 MT and 7.1 MT were from China and India respectively (Agstats, 2011). In Sri Lanka, groundnut is a crop which cultivated in highlands under rain fed condition in *Maha* season and in paddy lands of dry and intermediate zones under irrigation during *Yala* season. It is grown mainly in Monaragala, Hambantota, Puttalam and Kurunagala districts. Though groundnut is an oil crop, in Sri Lanka it is demanded as snacks and confectionaries. (Department of Agriculture, 2006). In *Yala* season of 2013, total

production of groundnut in Sri Lanka was 13,921 MT and extent of cultivation was 5799 ha with an average yield of 2.4 MT/ha while in *Maha* 2013/2014, the total production of groundnut was 9,568 MT and extent of cultivation was 9,885 ha with an average yield of 0.97 MT/ha (Department of Census and Statistics, 2014). Ampara District is in the dry zone and two seasons are cultivated with the help of irrigation facilities. In Ampara district, groundnut was cultivated in 392.5 ha in *Yala* 2013 and the production was 588.75 MT in interprovincial area and it was cultivated in 14.1 ha and the production was 22.56MT in provincial area. In *Maha* 2013/2014 groundnut was cultivated in 1366.15 ha and the production was 2137.84 MT in interprovincial area and it was cultivated in 21 ha and the production was 40.5MT from provincial area (Department of Agriculture, 2014a & 2014b).

Ampara District consists of 20 Divisional Secretariat (DS) areas and 507 Grama Niladhari (GN) divisions. The main livelihood activity in the district is Paddy cultivation and other field crops production. Ampara District is in the dry zone and two seasons are cultivated with the help of irrigation facilities. Thirukkivil DS division is one of the DS divisions in Ampara district and groundnut was the main other field crop cultivated in this DS division. Total land extent of other field crops in the DS division is 4350 ac in which 1800 ac is used for groundnut cultivation. It is 41% of the total land extent of the DS division. Sandy soil is used for groundnut cultivation and clay soil for paddy cultivation. The total production of groundnut was 585 MT and extent of cultivation was 360 ha in *Yala* and in *Maha* 2013/2014, the total production of groundnut was 920 MT and extent of cultivation was 575 ha in Thirukkivil DS division (Department of Agriculture, 2014a). Presently groundnut farming plays a significant role in rural areas among small scale and large scale farmers in the Thirukkivil DS division of Ampara district. Profitability is the key factor which decides the long term sustainability of the groundnut production in this area. To ensure the sustainability of groundnut production in Thirukkivil DS division it is vital to identify the key factors which influence the groundnut production. In this context a study was undertaken to find out the factors influence the groundnut production in Thirukkivil DS division of Ampara district.

2. METHODOLOGY

2.1 Study Area

The study was carried out in Thirukkivil DS division of Ampara district. Based on the high number of groundnut producers, seven GN divisions under Thirukkivil DS divisions were selected for this study purpose. The selected GN divisions were Thirukkivil-04, Vinnayagapuram-01, Vinnayagapuram-03, Vinnayagapuram-04, Sagamam, Thangavelayuthapuram, and Kanchikudisaru.

2.2 Selection of Sample

The population of this study consisted of groundnut growers in Thirukkivil DS division of Ampara district. Based on the high number of groundnut growers, seven GN divisions were selected for this study. And from those selected GN divisions, one village which consists of high number of groundnut producers were selected. Finally, according to the proportion of the total number of groundnut farmers in each selected villages a total seventy five (75) groundnut growers were randomly selected for this study purpose.

2.3 Data Collection and Analysis

Structured questionnaires were designed for interviewing groundnut farmers in Thirukkivil DS division. Before the commencement of the data collection, the questionnaires were pre-tested to assess the suitability of the prepared questionnaires. Changes were done to enable easy recording of responses from farmers. Data were collected from primary and secondary sources. Questionnaire survey was employed to collect the primary data. Secondary data necessary for the study obtained from the relevant sources. The collected data were analysed by SPSS software. Descriptive statistics were used to interpret the results and Chi-square was employed to test the association between different variables.

3. RESULTS AND DISCUSSION

3.1 Profile of the Groundnut Farmers

The study has shown that most of the people involved in groundnut cultivation in Ampara district were males (70%). The average age of a groundnut farmer was 48 years. This indicates that majority of the groundnut farmers were under middle age category in the study area. It was observed from the results that the majority of the groundnut farmers (92%) were married. Majority of the farmers (93.3%) have other occupations apart from groundnut farming. Educational level of farmers was determined by the year of schooling they had followed. According the results, average educational level of most of the groundnut farmers was 8 years of schooling. The average family income of the groundnut farmers was Rs 15, 800 per month. Most of the farmers involved in the groundnut farming had 11 years of farming experience. The average family size of a household was 4 members in the study area.

3.2 Data on Groundnut Cultivation

Groundnut farmers in the Thirukkivil DS division have been cultivating groundnut in three different seasons, *Maha* season, *Yala* season and Mid season. Among the three different seasons, a larger extent (164 ac) of high land was used for groundnut cultivation in *Maha* season. An extent of 121.5 ac of high land was used for

groundnut cultivation in *Yala* season. Equal extent of paddy land (05 ac) was used to groundnut cultivation in *Yala* and mid season in Thirukkoivil DS division. About 65% of farmers had cultivated groundnut in *Maha* and *Yala* seasons. About 21% of farmers had cultivated groundnut in *Maha* season only and about 9% of farmers had cultivated groundnut in both *Yala* and mid seasons. Very few percentages (4%) of farmers had cultivated in *Maha*, *Yala* and mid seasons in the study area. Among the groundnut farmers in the study area, 64% of farmers used tissa variety and 36% of farmers used local variety for their groundnut cultivation. Around 75% of farmers produced groundnut for seed purpose and around 25% of farmers produced groundnut for consumption purpose. Most of farmers (65%) had produced groundnut seeds in *Maha* and *Yala* seasons in the study area. Only around 33% of farmers had registered under Department of Agriculture (DOA) seed certification service for groundnut production and 28% of the farmers followed seed certification recommendations. Only around 39% of farmers had storage facilities to store their groundnut seeds.

3.3 Land Ownership in different Seasons

Majority of the farmers (89%) in Thirukkivil DS division cultivated in their own land during *Maha* season compare with other two seasons and 36% of the farmers cultivated in leased land during mid season compare with other two seasons (14% in *Yala* season and 11% in *Maha* season). During the *Maha* season, a total of 153 ac of own land was cultivated by the groundnut farmers, the same was 120 ac in *Yala* season and 10.5 ac in mid season. A same extent of leased land (19 ac) was cultivated by the groundnut farmers in *Maha* and *Yala* seasons. But, it was 06 ac in the mid season.

3.4 Source of irrigation water

Majority of groundnut farmers (49.3%) in the study area had used river water to irrigate their land. Around 15% farmers had used agro wells and around 13% farmers had used tube well as the irrigation source. At the same time, around 23% of farmers had involved in rain fed cultivation in the study area.

3.5 Fertilizer usage

Table 1. Fertilizer usage (% farmer responding)

Type of fertilizer used	Frequency	Percent
Urea,TSP and MOP	29	38.7
Compost ,Cowdung and Urea,TSP , MOP	06	8.0
Cowdung and Urea,TSP , MOP	09	12.0

Compost and Urea,TSP , MOP	01	1.3
Cowdung,urea,TSP,MOP and Gypsum	07	9.3
Compost ,Cowdung , Urea,TSP , MOP and Gypsum	23	30.7
Total	75	100.0

(Source: Field Survey Data, 2014)

Table 1 explains the different types of fertilizers applied for groundnut cultivation by the farmers in the study area. As shown in table, majority of the groundnut farmers (38.7%) had used urea, Triple Super Phosphate (TSP) and Muriat Of Pottash (MOP), around 31% of the farmers had used urea, TSP, MOP and gypsum along with compost and cow dung; while around 12% of farmers had used cow dung and urea, TSP, MOP. Only 1% of the farmer had used compost along with urea, TSP and MOP for groundnut cultivation. Most of farmers were practising Integrated Plant Nutrient Techniques in their groundnut cultivation.

3.6 Weed Control Method used

Table 2 provides the detail about different weed control methods used by the groundnut growers in Thirukkovil DS division of Ampara district.

Table 2. Weed control method used (% farmer responding)

Method of weeding	Frequency	Percent
Mechanical	53	70.7
Chemical	02	2.7
Both	20	26.6
Total	75	100.0

(Source: Field Survey Data, 2014)

As shown in table 2, majority of the groundnut farmers (71%) had used mechanical method for weed control in the groundnut field and mamoty was the main tool used by the farmers under this weed control method. Around 3% of the farmers had used chemical method; while around 27% had used both methods to control weeds in their groundnut fields.

3.7 Pest and Disease Attack

Pest and disease attack was the main problem faced by the groundnut farmers in the study area. Stem rot and wilt were the major diseases identified in the study area. Leaf eating caterpillar, pod borer and termites were identified as the major

pests that cause damages in groundnut production. Farmers did not practice Integrated Pest and Disease Management techniques to control pest and diseases, they entirely depends on chemical method to control pests and diseases in the study area.

3.8 Labour use

Most of the groundnut farmers (97.3%) hired both male and female labourers for ploughing, planting, weeding, fertilizer/pesticide application and harvesting. Also the study revealed that among the families where family members involved in farming, in 44.3% of the families both husband and wife were involved in groundnut farming. And in 30.7% of the families, husband, wife and children were involved in groundnut cultivation. The hired labours were obtained from the same villages (42.7%) and nearby villages (57.3%). Female hired labours were used for harvesting at a wage rate of Rs. 5 per kg of harvested groundnut. The wage rate for a male hired labour was varied between Rs. 800 and Rs 1000 per day.

3.9 Source of seed

Table 3 provides the detail on different sources used by the groundnut farmers in Thirukkivil DS division to obtain groundnut seeds for their cultivation.

Table 3. Sources of groundnut seeds (% farmer responding)

Source of seed	Frequency	Percent
Village farmer	38	50.7
Department of Agriculture	12	16.0
Other area farmer	07	9.3
Own seed	12	16.0
Village farmers & DOA	06	8.0
Total	75	100.0

(Source: Field Survey Data, 2014)

About 51% of the farmers had bought seeds from their own village groundnut farmers while about 16% of farmers had bought seeds from Department of Agriculture. Meanwhile around 9% of farmers had bought seeds from other area groundnut farmers. At the same time, 16% of farmers were used their own seed.

3.10 Profit from groundnut cultivation

According to the findings average net profit from groundnut cultivation was Rs. 56,175/ac in *Yala* season, Rs. 34,975/ac in *Maha* season and Rs 34,296 in mid season. Average net profit was high in *Yala* season because demand for groundnut seeds was high and good market price during the season. The study also revealed that the total production of groundnut was 96.78 MT/ac in *Yala* season while it was 96.21 MT/ac in *Maha* season and the total production of groundnut was 8.55 MT.ac in mid season.

3.11 Factors influencing the Production of groundnut Cultivation

Table 4. Chi square analysis between average groundnut yield and selected independent variables

Independent variables	χ^2	Df	p value	Decision
Educational level	14.503	06	0.024	Significant
Type of groundnut farming	14.423	03	0.002	Significant
Use of IPNS techniques	36.445	03	0.000	Significant

Table 4 shows the chi-square analysis between the groundnut yield and selected independent variables.

Educational level of groundnut farmers

There was a significant association observed between the average yield obtained in *Yala* season and the educational level of groundnut farmers ($\chi^2=14.503$, $p<0.05$). Among the groundnut farmers with secondary educational level, 67.5% obtained 501-750 kg of average yield in *Yala* season and 46.7% obtained 751 – 100 kg of average yield in the *Yala* season.

Type of groundnut farming

There was a significant association observed between the average yield obtained in by the groundnut farmers in *Yala* season and type of groundnut farming ($\chi^2=14.423$, $p<0.01$). Among the groundnut farmers who were engaged in groundnut farming in part time, 100% obtained 751 – 1000 kg of average yield in *Yala* season.

Use of Integrated Plant Nutrient System (IPNS) techniques

There was a significant association observed between the average yield obtained in *Yala* season by the groundnut farmers and the use of IPNS techniques ($\chi^2=36.445$, $p<0.01$). Among the IPNS techniques users 82.1% of the groundnut farmers

obtained 501-750 kg of average yield in *Yala* season. Among the farmers who did not follow the IPNS techniques, 100% obtained lesser than 250 kg of average yield.

It is evident from the table 4 that the education level of the farmer, type of groundnut farming (whether part time farmer or full time farmer) and use of IPNS techniques are the main determinants of groundnut production in the study area. The results are in accordance with Xaba (2013) who reported that the level of education of the vegetable farmer is one of the determinants which determined the profitability of vegetable production. Chapagain and Gurung (2010) found that use of IPNS technique increase the Maize yield in a study conducted in Nepal.

4. CONCLUSION

This study attempted to determine the factors that influence the groundnut production in Thirukkovil DS division of Ampara district. Results show that the educational level of groundnut farmers, type of groundnut farming and use of Integrated Plant Nutrient System (IPNS) practices are the most significant factors influencing the groundnut production in Thirukkovil DS division in Ampara district. These factors need to be considered carefully by the government and other relevant authorities during extension activities which intern enhance the future production and sustainability of the groundnut cultivation in Thirukkovil DS division of Ampara district.

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